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COMMENTS

GREEN MONSTERS: EXAMINING THE ENVIRONMENTAL IMPACT OF SPORTS STADIUMS

I. INTRODUCTION

Sports stadiums, particularly baseball parks in the United States, are commonly referred to as “Green Cathedrals.”¹ This moniker fits perfectly with the reverence with which Americans treat the sports industry.² Over the last fifty years, professional sports have transformed casual activities and pastimes into an estimated \$435 billion a year industry in the United States.³

One way in which the sports industry’s expansion can be seen is through the sudden increase in new, state-of-the-art, single team stadiums across the country.⁴ Over the last twenty-five years, teams in three of the four major U.S. sports associations, Major League Baseball (MLB), the National Football League (NFL), and the National Basketball Association (NBA), have built over sixty new stadiums.⁵ Further, an additional twelve teams from the National Hockey League (NHL) have moved into their own new arenas.⁶

These new sports complexes, like all newly constructed buildings, are subject to rules and regulations that attempt to minimize the buildings’ environmental impacts, both in their construction

1. See Jack F. Williams, Jessica O’Quin, & Joshua Stein, *Public Financing of Green Cathedrals*, 5 ALB. GOV’T L. REV. 123, 123-24 (2012) (discussing importance sports stadiums can have in contemporary U.S. culture).

2. See Jack F. Williams, *The Coming Revenue Revolution in Sports*, 42 WILLAMETTE L. REV. 669, 670 (2006) (emphasizing U.S. professional sports’ growth in past half century).

3. *Sports Industry Overview*, PLUNKETT RES. (2012), <http://www.plunkett-research.com/sports-recreation-leisure-market-research/industry-statistics> (providing statistical breakdown of revenues and income from American sports industry).

4. See Williams, O’Quin, & Stein, *supra* note 1, at 126 (discussing popular movement away from multi-team stadiums). Further, “The ‘one-size-fits-all’ model is viewed as aesthetically unpleasing; too small for football, too big for baseball. Sight-lines are off, fan experience marginalized, and local character quashed.” *Id.*

5. Dennis Coates, *A Closer Look at Stadium Subsidies*, AM. (Apr. 29, 2008), <http://www.american.com/archive/2008/april-04-08/a-closer-look-at-stadium-subsidies> (stating that between 1990 and 2008, nineteen MLB teams opened new stadiums, seventeen NFL teams opened new stadiums, and over twenty NBA teams opened new stadiums).

6. *NHL Arenas*, NHL.COM, <http://www.nhl.com/ice/teams.htm?nav=tms-main> (last visited Jan. 23, 2013) (listing current NHL arenas in use by teams).

and in their day-to-day operations.⁷ One federal law that affects sports stadiums is the National Environmental Policy Act (NEPA).⁸ Many states have more stringent environmental regulations than the federal government; in part because some states feel applicable federal policies, like NEPA, do not go far enough.⁹ The most notable of these is the California Environmental Quality Act (CEQA), which has had a serious influence on the planning, construction, and development of sports stadiums in California.¹⁰

Part II of this Comment will review the environmental problems existing sports stadiums present.¹¹ Part III will explore current “green” regulations on stadiums and their effectiveness in limiting a facility’s environmental impact.¹² Part IV of this Comment will discuss and analyze the actions teams and cities undertake to limit sports stadiums’ environmental impact so they can comply with state and federal laws and exceed what is statutorily required.¹³ Part V of this Comment will briefly review several newly constructed or renovated stadiums in other countries to compare their green measures to practices in the United States.¹⁴ Part VI will present and consider some common criticisms of the green stadium movement, both from those who view these changes as unnecessary and those who argue the changes do not go nearly far enough in limiting environmental impact.¹⁵ Finally, Part VII of the Comment will look at what is to come for green sports stadiums in the United

7. Alex B. Porteshawver, Comment, *Green Sports Facilities: Why Adopting New Green-Building Policies Will Improve the Environment and the Community*, 20 MARQ. SPORTS L. REV. 241, 247-49 (Fall 2009) (highlighting several pieces of legislation that affect sports stadiums’ construction and renovation).

8. See *id.* at 247 (noting various forms of federal legislation that impact sports stadiums’ construction).

9. See *id.* at 242-43 (discussing several states’ passage of their own environmental protection legislation).

10. See Jeremy H. Danney, Comment, *Sacking CEQA: How NFL Stadium Developers May Have Tackled the California Environmental Quality Act*, 19 PENN ST. ENVTL. L. REV. 131, 132-33 (Winter 2011) (showcasing CEQA’s impact on potential NFL stadiums in San Francisco and Los Angeles). For a discussion of CEQA and its impact on future California sports stadiums, see *infra* notes 53, 189-192 and accompanying text.

11. For a discussion of the environmental problems stadiums create, see *infra* notes 17-41 and accompanying text.

12. For a discussion of existing regulations, see *infra* notes 45-71 and accompanying text.

13. For a discussion of methods used by teams and stadiums, see *infra* notes 72-119 and accompanying text.

14. For a discussion of international stadiums and their attempts to reduce environmental impact, see *infra* notes 120-149 and accompanying text.

15. For a discussion of critiques and criticisms of the green stadium movement, see *infra* notes 150-187 and accompanying text.

States by reviewing the plans for several soon-to-be-constructed stadiums, including the so-called “most environmentally-friendly stadium” in the country.¹⁶

II. THE ENVIRONMENTAL IMPACT OF STADIUMS

During both their construction and general usage, sports stadiums create a number of environmental problems.¹⁷ Construction projects in the United States, including sports stadiums, consume sixty percent of the nation’s raw materials annually.¹⁸ Often, these construction projects fail to use recycled or local products that could reduce their environmental impact.¹⁹ Many of the products that go into stadiums’ interiors and exteriors, both during and after construction, also contribute to the detrimental environmental effects of these projects.²⁰

Stadiums can also worsen an area’s traffic and traffic-related air pollution because of the use of both construction and personal vehicles of stadium attendees and employees.²¹ Vehicular air pollution emits a number of harmful chemicals into the atmosphere; gathering thousands of vehicles in one location like a stadium releases an even greater amount of those substances in a concen-

16. Taylor Price, *49ers Break Ground on Santa Clara Stadium*, S.F. 49ERS (Apr. 12, 2012), <http://www.49ers.com/news/article-2/49ers-Break-Ground-on-Santa-Clara-Stadium/f8585a3f557d4154b083c8db7d3df2ff> (describing environmental innovations that will be built into new stadium). For a discussion of Levi’s Stadium and its environmentally friendly construction, see *infra* notes 188-208 and accompanying text.

17. See Porteshawver, *supra* note 7, at 248-49 (listing several environmental concerns that arise from sports stadiums).

18. *Id.* at 248 (highlighting quantity of raw materials consumed in United States by construction industry as whole).

19. See Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 MINN. L. REV. 231, 243 (2008) (emphasizing damage non-recycled materials can do to environment and outlining merits of LEED certified projects). For a discussion of LEED and LEED certification, see *infra* notes 75-83 and accompanying text.

20. See Porteshawver, *supra* note 7, at 248 (mentioning several items used in stadiums that cause environmental problems). For example, “[N]onrecycled steel is still used in conventional stadiums,” and “[t]his behavior contributes to increased greenhouse gas emissions from manufacturing new steel.” *Id.* Other products still used in stadiums that can cause environmental problems include “adhesives, paints, and solders [that] contain harmful substances including lead and isocyanates.” *Id.*

21. *Cars, Trucks, and Air Pollution*, UNION OF CONCERNED SCIENTISTS, http://www.ucsusa.org/clean_vehicles/why-clean-cars/air-pollution-and-health/cars-trucks-air-pollution.html (last updated Sept. 3, 2013) (describing many types of air pollution related to motor vehicles and traffic).

trated area.²² Exposure to these chemicals can have serious health consequences, and the Harvard School of Public Health found that exposure to these compounds is the most prominent contributor to heart attacks around the world.²³

In 2010, the Health Effect Institute (HEI), a non-profit, independent research association, conducted one of the most comprehensive examinations of traffic-related air pollution.²⁴ HEI found that between thirty and forty-five percent of individuals living in large U.S. cities, where the vast majority of sports stadiums are located, live within “exposure zones” that increase susceptibility to the effects of traffic-related air pollution.²⁵ HEI also identified a number of possible health problems that could result from living in exposure zones and attempted to determine which, if any, were directly connected to traffic-related air pollution.²⁶ HEI concluded more information was needed in some instances to state definitively that traffic-related air pollution caused these problems; however, the organization did find enough evidence to confirm a causal connection between exposure to air pollution and a worsening of asthmatic symptoms.²⁷

22. *See id.* (listing harmful chemicals released by vehicles). Pollutants from motor vehicles include particulate matter, hydrocarbons, nitrogen oxides, carbon monoxide, sulfur dioxide, hazardous air pollutants, greenhouse gases. *Id.*

23. *Traffic & Air Pollution Most Significant Triggers of Heart Attacks Worldwide*, HARV. SCHOOL OF PUB. HEALTH, <http://www.hsph.harvard.edu/news/hsph-in-the-news/pollution-heart-attacks/> (last visited Mar. 7, 2013) (outlining dangers air pollution has on risks of heart attack). In a recent study, researchers concluded “that exposure to traffic and air pollution contributes to 12 percent of heart attacks worldwide – the most of any factor.” *Id.*

24. HEALTH EFFECTS INSTITUTE, *TRAFFIC-RELATED AIR POLLUTION: A CRITICAL REVIEW OF THE LITERATURE ON EMISSIONS, EXPOSURE, AND HEALTH EFFECTS* 3 (2010), available at <http://pubs.healtheffects.org/getfile.php?u=552> (introducing methods used and studies analyzed in critical review).

25. *See id.* at 5 (estimating number of people that live in areas more affected by air pollution). Further, “[T]he Panel identified an exposure zone within a range of up to 300 to 500 m from a highway or major road as the area most highly affected by traffic emissions . . . and estimated that 30% to 45% of people living in large North American cities live within such zones.” *Id.*

26. *See id.* at 5-10 (analyzing possible health problems, such as cancer, allergies, birth defects, lung problems, and heart problems, for causal connection to traffic-related air pollution).

27. *See id.* at 10 (suggesting relationship between air pollution and respiratory problems). The Panel further concluded:

[T]he evidence is sufficient to support a causal relationship between exposure to traffic-related air pollution and exacerbation of asthma. It also found suggestive evidence of a causal relationship with onset of childhood asthma, nonasthma respiratory symptoms, impaired lung function, total and cardiovascular mortality, and cardiovascular morbidity, although the data are not sufficient to fully support causality.

Id.

Further studies show exposure to traffic-related airborne pollutants has a detrimental effect on the respiratory systems of infants and children.²⁸ For instance, the new Yankee Stadium located in the Bronx, New York created more traffic and, subsequently, more air pollution in an already congested part of New York City.²⁹ City officials have cited the increased traffic congestion as a contributing factor to a higher incidence rate of asthma in local Bronx residents, particularly in young children, compared to other areas of New York City.³⁰

Sports stadiums can also impact the environment due to the volume of water simply needed for day-to-day operations.³¹ The average MLB stadium uses approximately twelve million gallons of water per year.³² Special events require much more water, such as the 2012 NHL Winter Classic held in Philadelphia's Citizen's Bank Park, where 3.5 million gallons of water were consumed over a period of several days.³³

As teams build larger stadiums to allow more people to attend games and increase team revenues, the need for more amenities and restrooms follows.³⁴ For example, the new Dallas Cowboys' AT&T Stadium, which opened in 2009, has a seating capacity of 80,000 people and has over 1,600 toilets to accommodate that many

28. *Exposure to Traffic Air Pollution in Infancy Impairs Lung Function in Children*, SCI. DAILY (Oct. 12, 2012), <http://www.sciencedaily.com/releases/2012/10/121012074345.htm> (explaining Swedish study finding exposure to traffic-related air pollution has detrimental effect on lung development).

29. See Porteshawver, *supra* note 7, at 249 (describing environmental impact new Yankee Stadium has had on local neighborhood).

30. Fernanda Santos, *Metro-North Station Opens at Yankee Stadium*, N.Y. TIMES (May 21, 2009, 5:10 PM), <http://cityroom.blogs.nytimes.com/2009/05/21/metro-north-station-opens-at-yankee-stadium/> (discussing higher asthma rate among Bronx residents near Yankee Stadium than rest of NYC residents).

31. ALICE HENLY ET AL., NATIONAL RESOURCE DEFENSE COUNCIL, *GAME CHANGER: HOW THE SPORTS INDUSTRY IS SAVING THE ENVIRONMENT* 7 (2012) [hereinafter *GAME CHANGER*], available at <http://www.nrdc.org/greenbusiness/guides/sports/files/Game-Changer-report.pdf> (highlighting environmental problems caused by sports stadiums).

32. See *America's Top 7 Energy-Efficient Baseball Stadiums*, ALLIANCE TO SAVE ENERGY (Oct. 11, 2012), <http://ase.org/efficiencynews/americas-top-7-energy-efficient-baseball-stadiums> (comparing water consumption of newer, greener stadiums to average water consumption).

33. See *GAME CHANGER*, *supra* note 31, at 31 (stating 3.5 million gallons of water were consumed over several days during Winter Classic).

34. Eve Bachrach, *Dodger Stadium Getting Life-Sized Bobbleheads, More Toilets, Better WiFi, and More*, CURBED L.A. (Jan. 8, 2013), http://la.curbed.com/archives/2013/01/dodger_stadium_getting_lifesized_bobbleheads_more_toilets_better_wifi_and_more.php (discussing growth of Dodger Stadium and related additions of restrooms to accommodate increased attendants).

attendees.³⁵ The new Yankee Stadium, which also opened in 2009, has approximately 800 toilets for the more than 52,000 people it can hold.³⁶

Another major environmental issue that sports stadiums present is waste disposal.³⁷ The Environmental Protection Agency (EPA) approximates that around 17 million people attend professional sporting events in the United States annually, and another 48 million attend college games every year.³⁸ The EPA further estimates that sporting event attendees generate around 39 million pounds of trash per year.³⁹ For example, the MLB's Seattle Mariners' Safeco Field produces approximately 2.8 million pounds of trash every year.⁴⁰ Trash waste comes in many forms, but mostly from the containers for food and drink consumed in stadiums and parking lots.⁴¹

III. FEDERAL AND STATE REGULATIONS AND THEIR IMPACT ON SPORTS STADIUMS

Federal, state, and local government all control sports stadiums by imposing various regulations on their construction and use.⁴² Sports stadiums must comply with many federal regulations, including the Clean Air Act (CAA), the Clean Water Act (CWA), and NEPA.⁴³ Further, states and local governments regulate sports or-

35. DALLAS COWBOYS STADIUM: WHAT FANS NEED TO KNOW, DALLAS COWBOYS 1, 2, *available at* http://stadium.dallascowboys.com/assets/pdf/press_release_stadium_facts_121206.pdf (stating number of restrooms and concession points in new stadium).

36. John Branch, *New Ballpark Statistic: Stadium's Toilet Ratio*, N.Y. TIMES (Apr. 12, 2009), http://www.nytimes.com/2009/04/13/sports/baseball/13potty.html?pagewanted=all&_r=1& (describing facilities in new stadiums in New York area).

37. See Barbi Walker, *Greening the Sidelines*, GREEN LIVING AZ MAG. (Sept. 2, 2011, 4:31 PM), <http://www.greenlivingaz.com/2011/09/02/greening-the-sidelines/> (noting dilemma of sports stadiums' creation and disposal of trash).

38. *Id.* (analyzing EPA's estimate of 65 million sporting event attendees per year).

39. *Id.* (extrapolating EPA's estimates regarding waste production at sporting events).

40. Porteshawver, *supra* note 7, at 248 (highlighting one stadium's output of garbage). Garbage is a large problem at sports facilities because "[f]ans produce mountains of trash by the time they leave, nearly all of which ends up in landfills." *Id.* (internal quotation marks omitted).

41. Randy Woods, *Waste From . . . Stadiums*, WASTE AGE MAG., Apr. 1993, 87, 87-88 *available at* <http://infohouse.p2ric.org/ref/09/08938.pdf> (identifying types of waste found in typical sports stadiums).

42. For a discussion of federal, state, and local regulation on sports stadiums, see *infra* notes 45-71 and accompanying text.

43. For a discussion of federal regulation impacting sports stadiums, see *infra* notes 45-56 and accompanying text.

ganizations when they choose to impose more stringent requirements on stadiums than the federal government.⁴⁴

A. Federal Regulations

As early as 1973, the EPA began tracking the pollution caused by traffic around sports stadiums.⁴⁵ One of the most important laws governing stadiums today is the CAA.⁴⁶ Among other things, the CAA regulates National Ambient Air Quality Standards and grants the EPA enforcement authority over those standards.⁴⁷

A second major piece of federal environmental legislation used to regulate sports stadiums is the CWA.⁴⁸ Like the CAA, the CWA greatly expands federal enforcement capabilities over environmental issues.⁴⁹ The CWA provides the EPA with the authority to regulate discharges into waters of the United States and also empowers the agency to execute pollution control programs, such as industrial wastewater standards.⁵⁰

Another piece of federal environmental legislation impacting sports stadiums is NEPA.⁵¹ Although NEPA does not affect stadium construction and operations directly, the Act's key requirements

44. For a discussion of state and local regulation, see *infra* notes 57-71 and accompanying text.

45. SCOTT D. THAYER & KENNETH AXETELL, JR., GEOMET, INC., VEHICLE BEHAVIOR IN AND AROUND COMPLEX SOURCES AND RELATED COMPLEX SOURCE CHARACTERISTICS VOLUME III-SPORTS STADIUMS 1 (Sept. 1973), available at http://cfpub.epa.gov/ols/catalog/advanced_brief_record.cfm?&FIELD1=SUBJECT&INPUT1=Vehicular%20traffic&TYPE1=EXACT&LOGIC1=AND&COLL=&SORT_TYPE=MTIC&item_count=43 (providing EPA's analytic view of traffic-related pollution near sports stadiums).

46. *Clean Air Act Requirements and History*, ENVTL. PROT. AGENCY, http://epa.gov/oar/caa/caa_history.html (last updated Aug. 15, 2013) (outlining historical background of CAA).

47. See *id.* (listing various provisions created in CAA and powers granted to EPA).

48. *Summary of the Clean Water Act*, ENVTL. PROT. AGENCY, <http://www2.epa.gov/laws-regulations/summary-clean-water-act> (last updated Aug. 15, 2013) (detailing overview of CWA structure and enforcement provisions).

49. *Enforcement Actions Under Title VI of the Clean Air Act*, ENVTL. PROT. AGENCY (Oct. 23, 2012), <http://www.epa.gov/ozone/enforce/index.html> (explaining several expanded enforcement rights EPA gained under CAA).

50. *History of the Clean Water Act*, ENVTL. PROT. AGENCY, <http://www2.epa.gov/laws-regulations/history-clean-water-act> (last updated Apr. 17, 2013) (describing powers and rights granted to EPA and requirements established under CWA).

51. COUNCIL ON ENVTL. QUALITY, A CITIZEN'S GUIDE TO THE NEPA 2 (Dec. 2007), available at http://www.blm.gov/pgdata/etc/medialib/blm/nm/programs/planning/planning_docs.Par.53208.File.dat/A_Citizens_Guide_to_NEPA.pdf (detailing history and purpose of NEPA).

are applicable when a federal agency is involved in the project.⁵² NEPA's legacy on stadiums comes in the form of state legislation modeled after the federal law, such as CEQA, which is generally applied much more broadly and is often more strict than NEPA.⁵³

Federal laws affect stadiums even before construction begins.⁵⁴ For example, during the construction of MetLife Stadium in New Jersey, the EPA used its authority under both the CAA and the CWA to step in and "promote the . . . efforts to prevent, reduce and eliminate pollution."⁵⁵ Moreover, these laws impact stadium construction plans, such as the construction of the MLB's Colorado Rockies' Coors Field, which implemented a Storm Water Management Plan to prevent future issues with the EPA.⁵⁶

B. State Regulations

In addition to complying with federal regulations, sports organizations must also follow state and local environmental regulations when planning, designing, and building a new stadium.⁵⁷ California's state legislature drafted its CEQA specifically because it did not feel NEPA went far enough in its environmental regulations.⁵⁸ Further, the state of Washington passed a law in 2009 that could have an impact on Seattle's rumored new basketball arena because

52. See Danney, *supra* note 10, at 131-32 (providing limitations to NEPA when requiring EIS to be filed).

53. *Id.* at 131-32 (explaining CEQA is more strict than NEPA in that CEQA requires filing of EIRs). CEQA is further distinguished from NEPA because it "applies when there is a 'discretionary project proposed to be carried out or approved by public agencies.'" *Id.* at 134.

54. *Memorandum of Understanding Between the United States Environmental Protection Agency (EPA) and the New Meadowlands Stadium (NMS)* 14 (June 1, 2009), available at http://www.epa.gov/region2/greenteam/pdf/new_meadowlands_stadium_MOU.pdf (documenting EPA's monitoring of construction of New Jersey's MetLife Stadium prior to 2010 completion).

55. *Id.* at 13 (citing to EPA's authority under Section 103 of CAA and Section 104 of CWA to enter into Memorandum of Understanding).

56. *Storm Water Management Plan Public Information Statement*, COLO. ROCKIES, http://colorado.rockies.mlb.com/col/ballpark/information/index.jsp?content=water_manage (last visited Jan. 16, 2013) (explaining CWA's impact on stadium's construction). The public information statement for the Colorado Rockies' Storm Water Management Plan states, "Coors Field was designed and constructed under the direction of a statutory Special District and is therefore subject to the Phase II rules of the National Pollutant Discharge Elimination System that is part of the Clean Water Act." *Id.*

57. See Porteshawver, *supra* note 7, at 255-57 (highlighting several state laws impacting stadium construction beyond federal regulations).

58. See Danney, *supra* note 10, at 133-34 (discussing concerns with NEPA). For a further discussion of CEQA and its impact on sports stadiums, see *infra* notes 189-192 and accompanying text.

it already required more than 100,000 buildings to undergo weatherizing and improve their energy efficiency.⁵⁹

Additionally, a number of states have passed laws and created programs aimed at stimulating green job growth.⁶⁰ For example, Massachusetts passed the Green Jobs Act of 2008, which utilized grant money to create green jobs and encourage local energy economies.⁶¹ Minnesota passed the Demand Efficiency Act, which empowered a Green Jobs Task Force to put a strategy into practice for creating and sustaining new green jobs.⁶² Moreover, national demand for solar panels is rising: Wisconsin, home to three professional sports teams, experienced a boom in solar panel construction and manufacturing.⁶³ In response, a new solar glass plant opened in Wisconsin that plans to employ nearly 200 people when fully operational.⁶⁴

In 2007, then Florida Governor Charlie Crist signed three Executive Orders (EOs) intended to reduce greenhouse gas emissions, promote the use of alternative power sources and fuels, bolster conservation and energy efficiency levels, and encourage state projects to use green construction methods.⁶⁵ The EOs also required that all new state projects “strive” to achieve Leadership in Energy and Environmental Design (LEED) Platinum standards.⁶⁶ Also in 2007, New York City passed the New York City Green City Buildings Act (NY Act), which made it the largest city in the United States to approve and require green building guidelines.⁶⁷ The NY Act requires all municipal buildings to achieve set standards of sustainability, forcing a number of existing buildings to undergo additions and renovations in order to ensure compliance.⁶⁸

59. See Porteshawver, *supra* note 7, at 256 (briefing scope of Washington state environmental legislation).

60. *Id.* (providing examples of green job creation by state governments).

61. *Id.* (outlining scope of Massachusetts Green Jobs Act of 2008).

62. See *id.* (detailing Minnesota’s Demand Efficiency Act of 2007).

63. See *id.* at 257 (highlighting successes of Wisconsin’s booming solar market).

64. See Porteshawver, *supra* note 7, at 257 (praising Wisconsin’s efforts to get in front of green job movement and employ state’s citizens).

65. J.R. Steele, *Green Construction: Initiatives and Legal Issues Surrounding the Trend*, 17-DEC BUS. L. TODAY 13, 14 (November/December 2007) (exploring rationale behind Florida EOs 07-126, 07-127, and 07-128).

66. *Id.* (mentioning more optimistic goals set out in Governor Crist’s EOs). For a discussion of LEED and LEED certification, see *infra* notes 75–83 and accompanying text.

67. *Id.* (detailing elements of NY Act).

68. See *id.* (covering various difficulties existing buildings have experienced while attempting to comply with NY Act).

Washington, D.C. also passed a green buildings bill requiring both public and private buildings in the city to meet certain green standards.⁶⁹ The bill ordered all commercial developments of 50,000 square feet or more, which includes most sports arenas, to comply with LEED standards by 2012 and is one of the reasons the Washington Nationals organization placed such an emphasis on Nationals Park earning LEED certification.⁷⁰ Additionally, both Atlanta and Seattle passed ordinances requiring any buildings larger than 5,000 square feet to attain LEED Silver rating.⁷¹

IV. THE GREEN STADIUM MOVEMENT: WHAT TEAMS ARE DOING TO MAKE THEIR GREEN CATHEDRALS GREENER.

As the stadium boom of the last three decades continues, teams have started to embrace the green movement, both to contribute to a better environment and to reap long-term financial benefits.⁷² Over 100 sports teams in the United States have joined the Green Sports Alliance (GSA), an organization that seeks to reduce the environmental impact of sports facilities.⁷³ In September 2012, the GSA signed a Memorandum of Understanding with the EPA that committed the EPA to providing sports teams in the United States with the data and expertise needed to address environmental problems stadiums can create.⁷⁴

Apart from the GSA, many sports franchises are building their new stadiums to meet LEED standards, starting with the Washington Nationals in Washington D.C., which opened its stadium in 2008.⁷⁵ LEED is a program created by the U.S. Green Building Council (GBC) that assists people and organizations looking to

69. *Id.* (highlighting breadth and scope of Washington D.C.'s green building bill).

70. See Steele, *supra* note 65, at 13 (emphasizing requirements of D.C. green buildings bill as one reason Nationals Park earned LEED certification). For a discussion of LEED standards, see *infra* notes 76-83 and accompanying text.

71. *Id.* (covering other cities that have also adopted regulations to encourage construction of green buildings).

72. See Walker, *supra* note 37 (describing reasons stadiums are taking steps to limit environmental impact).

73. *About Us*, GREEN SPORTS ALLIANCE, <http://greensportsalliance.org/about-us> (last visited Jan. 21, 2013) (providing overview of goals and mission of GSA).

74. See Bob Perciasepe, *Sports and a Sustainable Future*, ENVTL. PROT. AGENCY (Sept. 7, 2012), <http://blog.epa.gov/blog/2012/09/green-sports/> (detailing scope of arrangement between EPA and GSA).

75. See *America's Top 7 Energy-Efficient Baseball Stadiums*, *supra* note 32 (listing reasons why Nationals Park achieved LEED certification).

build more environmentally friendly structures.⁷⁶ The LEED program aims to minimize the environmental impact that buildings have through the use of measures such as high-efficiency lighting, low-flow and waterless toilets, and waste reduction techniques.⁷⁷ Nationals Park, for example, uses a number of environmentally friendly features, such as a reflective roof that reduces air conditioning use, energy-efficient lighting, and efficient plumbing saving 3.6 million gallons of water per year.⁷⁸

LEED created a certification system in 1998 to rate the design, construction, and operation of new buildings, thereby promoting greener design practices and creating a common benchmark for measuring the construction of sustainable buildings.⁷⁹ Under the LEED certification system, buildings are awarded points based on factors including sustainability, water efficiency, and indoor environmental quality.⁸⁰ Buildings are also awarded points if they are constructed in areas reachable by walking, they are located on previously developed sites, or the construction process includes any innovative designs or production techniques that fall outside of LEED's specifically enumerated factors.⁸¹ There are 100 points in the LEED system, and new construction certification is available on four levels, ranging from LEED Certified at forty to forty-nine points up to LEED Platinum if a building earns eighty points or more.⁸² There are different LEED programs and standards for commercial construction, renovation and rehabilitation of existing buildings, and development of residential neighborhoods.⁸³

76. See *About LEED*, U.S. GREEN BUILDING COUNCIL, <http://www.usgbc.org/articles/about-leed> (last visited Oct. 15, 2013) (detailing benefits and purposes of building structures to LEED specifications).

77. See *LEED Facts*, U.S. GREEN BUILDING COUNCIL, <http://www.usgbc.org/articles/leed-facts> (last visited Oct. 15, 2013) (cataloging ways in which LEED reduces environmental impact of certified buildings).

78. See *Nationals Stadium*, U.S. GREEN BUILDING COUNCIL, <http://new.usgbc.org/projects/nationals-stadium> (last visited Oct. 15, 2013) (demonstrating measures taken to gain LEED certification at Nationals Park).

79. Steele, *supra* note 65, at 13-14 (providing background information, goals, and initiatives of LEED program).

80. *LEED Rating System*, U.S. GREEN BUILDING COUNCIL, <http://new.usgbc.org/leed/rating-systems> (last visited February 8, 2013) (detailing factors considered in LEED certification points system).

81. *Id.* (explaining alternative ways buildings can earn LEED credits outside of main credit categories).

82. *LEED Green Building Certification System*, U.S. GREEN BUILDING COUNCIL, <http://www.usgbc.org/ShowFile.aspx?DocumentID=3330> (last visited Feb. 8, 2013) (providing overview of points needed to achieve each level of LEED certification).

83. See Steele, *supra* note 65, at 13 (mentioning differences between various LEED certification programs).

While LEED certification is one way to encourage a team to adopt environmentally conscious practices, many teams whose facilities are not LEED certified are still taking steps to minimize their environmental impact.⁸⁴ Minute Maid Park, the home of baseball's Houston Astros, is one such stadium.⁸⁵ The Astros use a number of green initiatives, including initiating an aggressive recycling campaign for front office employees, using eco-friendly chemicals, such as a seaweed-based fertilizer on their field, composting all grass clippings, and recycling grease for later use as fuel.⁸⁶ Additionally, the Astros run a "Play Green" campaign that encourages environmentally friendly practices in the Houston community as a whole.⁸⁷

The St. Louis Cardinals' Busch Stadium, which opened in 2006, also implements a number of environmentally friendly practices.⁸⁸ One area the Cardinals focus on is waste management, which began when the organization launched the "4 a Greener Game Program."⁸⁹ More than 1,800 tons of recycling and 575 tons of waste have been diverted from local landfills since the program started in 2008.⁹⁰ Since the opening of the stadium, the team has also reduced their energy use by twenty percent and water use by ten percent.⁹¹

Another stadium taking great steps to decrease its environmental impact is Lincoln Financial Field, home of the Philadelphia Ea-

84. W. S. Miller, *Changing Playing Fields: The Sports Attorney's Obligation to Learn Green*, 21 MARQ. SPORTS L. REV. 139, 156-57 (2010) (discussing teams, such as MLB's Houston Astros, with non-LEED certified stadiums who are still taking environmentally friendly actions).

85. *Id.* at 156 (mentioning one of several non-LEED stadiums that has taken steps to decrease environmental impact).

86. Alyson Footer, *Astros Going Earth Friendly in 2008*, MLB.COM (Mar. 26, 2008), http://houston.astros.mlb.com/news/article.jsp?ymd=20080326&content_id=2458930&vkey=spt2008news&fext=.jsp&c_id=hou (detailing some procedures Astros are taking to lessen environmental impact of Minute Maid Park).

87. See *The Mayor's Office of Environmental Programming Recognizes the Houston Astros for Their Commitment to the Environment*, CITY OF HOUSTON (June 4, 2008), <http://www.houstontx.gov/citizensnet/LookWhosGreen060408.html> (praising Astros for efforts to raise environmental awareness in Houston).

88. See Miller, *supra* note 84, at 158 (outlining various green features at Busch Stadium, such as energy-efficient lighting and low-flow toilets and sinks).

89. *4 A Greener Game*, ST. LOUIS CARDINALS, <http://stlouis.cardinals.mlb.com/stl/community/green.jsp> (last visited February 3, 2013) (covering some points of emphasis in Cardinals' "4 A Greener Game" program).

90. *Id.* (detailing successful efforts to remove recyclables from stadium garbage through initiatives like providing extra recycling bins and staffing volunteers to collect recyclables during games).

91. *Busch Stadium Facts*, ST. LOUIS CARDINALS, <http://stlouis.cardinals.mlb.com/stl/ballpark/facts/index.jsp> (last visited February 3, 2013) (covering basic facts about stadium including environmental information).

gles.⁹² The Eagles have implemented a number of environmentally friendly measures, including installing high-efficiency boilers and promoting an aggressive recycling campaign.⁹³ The stadium also includes a number of renewable energy sources capable of generating 100 percent of the stadium's energy needs.⁹⁴ In addition to these measures, the Eagles organization also encourages a green lifestyle outside of the facilities by reimbursing employees who purchase renewable energy for their own homes through local energy providers.⁹⁵

While major league sports teams are at the forefront of the green stadium movement, they are not the only organizations that have taken steps to make sports stadiums more environmentally friendly.⁹⁶ The State College Spikes, the Class A Short Season Affiliate of the St. Louis Cardinals, located in State College, Pennsylvania, is just one example of a minor league team implementing green measures.⁹⁷ In 2006, the Spikes and Penn State University opened a shared stadium, Medlar Field at Lubrano Park, which was the world's first LEED certified stadium.⁹⁸ One of the unique features that led to Medlar Field at Lubrano Park's LEED certification is that the urinals in the men's restrooms are waterless, which eliminates the need for copper piping and plumbing and saves countless gallons of water.⁹⁹ The team also provides bike racks at the stadium to encourage people not to drive to the games and uses only recycled cooking oil to cut down on waste.¹⁰⁰

92. Tim Newcomb, *There's a Windmill on the Field: Why Pro Sports Are Going Green*, TIME MAG. ONLINE (Sept. 6, 2012), <http://newsfeed.time.com/2012/09/06/theres-a-windmill-on-the-field-why-pro-sports-are-going-green/> (highlighting several sports teams that have adopted green measures in their stadiums).

93. Miller, *supra* note 84, at 158-59 (listing eco-friendly measures taken by Eagles organization).

94. See Newcomb, *supra* note 92 (mentioning ways Lincoln Financial Field produces entirety of energy needs). The green initiatives at Lincoln Financial Field are notable because the stadium "is the first stadium in the U.S. capable of generating 100 percent of its energy from renewable sources: a combination of solar panels, a biodiesel/natural gas generator and, soon, 14 wind turbines." *Id.*

95. See Miller, *supra* note 84, at 159 (outlining Eagles' program to encourage use of renewable energy in employees' homes).

96. See *id.* at 155-56 (detailing non-major league sports teams that have placed emphasis on greener stadiums).

97. *Id.* at 156 (describing various activities by organization intended to promote environmentally beneficial activities).

98. *LEED Certification*, STATE COLLEGE SPIKES, http://www.milb.com/content/page.jsp?sid=t1174&ynd=20090401&content_id=547906&vkey=team1 (last visited Feb. 5, 2013) (extolling virtues of stadium and LEED certification).

99. *Id.* (highlighting features of stadium's water conservation efforts).

100. *Id.* (listing other steps organization takes, both for LEED certification and overall environmental impact reduction).

As technology improves and teams continue to embrace the green movement, the newest stadiums are becoming increasingly more environmentally conscious in both design and construction.¹⁰¹ The new Yankee Stadium features a number of environmentally friendly innovations.¹⁰² The organization installed more energy efficient lighting fixtures, which each consume approximately 300 fewer watts than the lights at the old Yankee Stadium and, as a result, reduce carbon dioxide emissions by over 200,000 pounds every game.¹⁰³ Further, the Great Hall section of the stadium uses natural cooling instead of air conditioning, which the team estimates has the same impact as 10,000 New York City apartments shutting off their air conditioning for a day in the summer.¹⁰⁴ The restrooms also use a special kind of hand soap that does not require water to use and has the potential to save nearly a million gallons of water if fully utilized.¹⁰⁵

The Minnesota Twins' Target Field, which opened in 2010, received the most LEED certification points of any stadium at the time of its opening and was temporarily given the title of "Greenest Ballpark in America."¹⁰⁶ Among Target Field's green features are a series of cisterns that gather rainwater from a seven-acre area that is then filtered, disinfected, and used to clean the stadium and to water the field instead of using water from the Minneapolis public water system.¹⁰⁷ The organization also took advantage of the newest advances in recycling technologies and was able to reuse or re-

101. See *Twins' Target Field Gets Highest LEED Rating of Any Ballpark in America*, MLB.COM (Apr. 8, 2010, 11:03 AM), http://mlb.mlb.com/news/article.jsp?ymd=20100408&content_id=9141798&vkey=news_mlb&c_id=mlb [hereinafter *Twins' Target Field*] (covering latest innovations in new stadiums, including MLB's Minnesota Twins' Target Field).

102. *Yankee Stadium Green Initiatives*, N.Y. YANKEES, http://newyork.yankees.mlb.com/nyy/ballpark/information/index.jsp?content=green_initiatives (last visited Feb. 5, 2013) (featuring many steps Yankees took to make new Yankee Stadium greener).

103. *Id.* (comparing lighting system of various stadiums to show impact of improved lighting technologies). The energy savings from the new Yankee Stadium lighting reduces emissions "equivalent [to] about one tree being planted for every pitch of the home season." *Id.*

104. *Id.* (continuing to emphasize green features in new Yankee Stadium).

105. *Id.* (explaining purpose of Yankees' installation of GoJo hand soap in restrooms of new Yankee Stadium).

106. *Id.* (showing many green features that led to Target Field's LEED certification). For a discussion of LEED and LEED certification, see *supra* notes 75–83 and accompanying text.

107. Jennifer Hattam, *Twins' New Stadium to Cut Water Use in Half*, TREEHUGGER (Jan. 22, 2010), <http://www.treehugger.com/corporate-responsibility/twins-new-stadium-to-cut-water-use-in-half.html> (explaining that cistern system was put into place to reduce municipal water footprint by two million gallons per year).

cycle all the concrete, wood, cardboard, metals, and paper that went into building Target Field.¹⁰⁸

The newest stadium in the MLB, Marlins Park in Miami, which opened in 2012, recently stole Target Field's title as the "Greenest Ballpark in America" by earning four more credits than Target Field and was awarded LEED Gold certification.¹⁰⁹ During construction of Marlins Park, the organization recycled ninety-seven percent of all debris, and more than half of the materials used came from within 500 miles of the stadium, which reduced transportation emissions and energy costs.¹¹⁰ Additionally, the plumbing was designed to reduce water use by more than fifty percent, compared to stadiums of similar size, through innovations ranging from waterless urinals to the planting of native flora with lower water needs.¹¹¹ The Marlins also used recycled Nike shoes as the basis for a synthetic pouring that was placed into the clubhouse floor.¹¹² Creative building techniques like these earned the facility an extra three LEED points for innovation.¹¹³ Due to these inventive ideas and modern green technology, Marlins Park was recently dubbed the "Most Energy-Efficient Baseball Stadium" in the country.¹¹⁴

Despite the many success stories, some teams have not taken steps to reduce their environmental impact and are suffering from issues such as the rising prices of utilities.¹¹⁵ One such team is the NFL's Indianapolis Colts, whose Lucas Oil Stadium opened in 2011

108. See *Twins' Target Field*, supra note 101 (emphasizing programs to reduce impact on local landfills during construction of Target Field).

109. Tom Green, *Marlins Park Earns LEED Gold Certification*, MLB.COM (May 25, 2012, 7:05 PM), http://miami.marlins.mlb.com/news/article.jsp?ymd=20120525&content_id=32216798&vkey=news_mia&c_id=mia (describing ceremony honoring Miami Marlins for creation of first retractable-roof facility to earn LEED Gold Certification).

110. *Id.* (discussing methods taken by Marlins' ownership in effort to achieve Gold certification).

111. *Id.* (outlining methods taken to reduce water usage by fifty-two percent).

112. *Id.* (demonstrating Marlins' innovation in achieving LEED Gold certification).

113. *Id.* (showing ways in which Marlins Park obtained enough LEED points to achieve Gold Certification).

114. Miriam Berg, *The 7 Most Energy-Efficient Baseball Stadiums in the U.S.*, INHABITANT (Oct. 18, 2012), <http://inhabitat.com/the-7-most-energy-efficient-baseball-stadiums-in-the-u-s/1-miami-marlins-7-most-efficient-baseball-parks-alliance-to-save-energy/?extend=1> (highlighting many features in Marlins Park that make it energy efficient).

115. See *Plumbing Problems Plague Lucas Oil Stadium*, INDY CHANNEL (Mar. 22, 2011), <http://www.theindychannel.com/news/plumbing-problems-plague-lucas-oil-stadium> (covering problems faced by Indianapolis Colts and their new stadium).

and has experienced a number of problems with the plumbing system.¹¹⁶ The stadium's piping was filled with rust and corrosion, which the team dealt with by running water constantly to flush them out.¹¹⁷ The increased water use led to a utility bill of \$23,618 in September of 2010, an increase of over 240 percent from the bill in September 2009.¹¹⁸ In that same month, the stadium used a staggering 14 million gallons of water, enough to fill all the outdoor public swimming pools in Indianapolis three times.¹¹⁹

V. INTERNATIONAL STADIUMS

The green stadium movement is not confined to just the United States.¹²⁰ Other countries, particularly European nations, deal with pollution by encouraging people to take public transportation in cities at all times, while also making cities less driver-friendly.¹²¹ European cities do this by using a number of strategies, including closing large sections of the cities to cars, taking away portions of roadways for bicycle lanes, imposing heavy tolls, known as "congestion charges," and allowing only low emission vehicles to travel in certain parts of cities.¹²² As one European expert noted, "In the United States, there has been much more of a tendency to adapt cities to accommodate driving . . . Here there has been more movement to make cities more livable for people, to get cities relatively free of cars."¹²³ Other factors also account for the difference in transportation preferences, such as the historical reality that

116. *Id.* (noting Colts would have to replace all galvanized piping in brand new stadium).

117. Mary Milz, *Lucas Oil Stadium's Water Bills Skyrocket*, WTHR (Mar. 15, 2011, 6:08 PM), <http://www.wthr.com/story/14258003/lucas-oil-stadiums-water-bills-skyrocket> (specifying problems in stadium plumbing and explaining team's attempts to remedy situation).

118. *Id.* (highlighting discrepancy between \$26,618 billion in 2010 and nearly \$7,000 billion in same month of 2009).

119. *Id.* (offering alternate uses for quantity of water used in Lucas Oil Stadiums' plumbing and water use problems).

120. See *UEFA Guide to Quality Stadiums*, UNION OF EUR. FOOTBALL ASS'NS 1, 90-101 (2011), available at http://www.uefa.com/MultimediaFiles/Download/EuroExperience/competitions/General/01/74/38/69/1743869_DOWNLOAD.pdf (demonstrating Europe's governing football body's commitment to environmentally-friendly stadiums).

121. See Elisabeth Rosenthal, *Across Europe, Irking Drivers Is Urban Policy*, N.Y. TIMES (June 26, 2011), http://www.nytimes.com/2011/06/27/science/earth/27traffic.html?pagewanted=all&_r=0 (outlining social policies in European nations that discourage use of cars in crowded cities).

122. See *id.* (listing ways European cities attempt to limit use of cars and encourage use of public transportation).

123. *Id.* (quoting Peder Jensen, head of Energy and Transport Group at European Environment Agency, on reducing vehicle use).

many European cities predate cars and the higher price of gasoline that makes driving costs two to three times more in Europe than in the United States.¹²⁴

Like stadiums in the United States, many European stadiums have taken steps to reduce their environmental impact in recent years.¹²⁵ For instance, London's Wembley Stadium, England's national soccer arena, was recently renovated and reopened in 2007 with several new and innovative green features.¹²⁶ The stadium is powered by 100 percent green energy, and since 2007, stadium management has reduced electricity use and carbon emissions by nearly thirty percent.¹²⁷ Further, Wembley Stadium is a "public transport venue," meaning it is easily accessible by London city public transport.¹²⁸ There are three major stations that serve five different train and subway lines close to Wembley Stadium, and the stadium also has a Green Travel Plan that attempts to decrease the number of people coming to the stadium by car.¹²⁹

A few miles across London, Arsenal Football Club's Emirates Stadium provides another example of a European stadium embracing the green movement in its construction.¹³⁰ The club utilizes low-energy LED lighting instead of incandescent bulbs and florescent tubes.¹³¹ As part of the construction of the stadium, Arsenal also helped build a new state-of-the-art recycling center for the London borough of Islington, where the stadium is located.¹³² Moreover, Arsenal has more fans that arrive at their stadium by

124. *See id.* (citing reasons for success of public transportation in Europe beyond government action and regulation).

125. *See UEFA Guide to Quality Stadiums*, *supra* note 120, at 92 (emphasizing intent of UEFA to promote green architecture in soccer stadiums).

126. *Doing Our Bit to Prevent Climate Change*, WEMBLEY STADIUM, <http://wembleystadium.com/TheStadium/StadiumGuide/Sustainability> (last visited Oct. 25, 2013) (featuring many green improvements made to renovated stadium prior to reopening in 2007).

127. *See id.* (cataloging efforts to reduce energy use at Wembley Stadium, including turning off lights on stadium's signature arch on days when stadium is not in use).

128. *See id.* (encouraging visitors to take public transportation to Wembley Stadium).

129. *See id.* (highlighting myriad of ways people can reach stadium using public transportation).

130. *Environment and Regeneration*, ARSENAL FOOTBALL CLUB (Jan. 12, 2011), <http://www.arsenal.com/the-club/community/environment-and-regeneration> (detailing ways Emirates Stadium implements environmentally friendly procedures).

131. *Id.* (emphasizing lower energy costs in stadium from installation of LED lighting).

132. *Id.* (demonstrating Arsenal's commitment to environmental issues both in its stadium and in community).

means other than personal cars than any other team in the English Premier League.¹³³ Seventy percent of Arsenal fans arrive at the stadium without driving their own cars, meaning that for a stadium of 60,000 people, almost 45,000 fans arrive by public transportation or means other than their own cars.¹³⁴

While English stadiums appear to be at the forefront in European green stadium construction, England is by no means the only nation committed to building environmentally friendly stadiums.¹³⁵ Italian soccer team Juventus opened their new Juventus Stadium in the city of Turin in 2011.¹³⁶ Like many of its U.S. counterparts, the stadium employed green construction, such as utilizing environmentally friendly materials and recycling methods, to reduce the stadium's environmental impact.¹³⁷ While the stadium has a low-use energy consumption system in place, critics were quick to point out that the stadium is fueled mostly by non-renewable energy sources.¹³⁸ In response to this criticism, Juventus installed photovoltaic panels on the stadium that capture solar energy to reduce waste and decrease the use of non-renewable resources.¹³⁹ The facility also uses the solar energy to heat water, which in turn heats the stadium, the kitchens, the suites, and other rooms throughout the complex, keeping energy costs and consumption down.¹⁴⁰

In addition to individual teams and countries taking steps to make their stadiums more environmentally friendly, larger organizations, such as the Union of European Football Associations (UEFA), also promote green construction and energy reduction techniques in stadiums within their jurisdiction.¹⁴¹ One of the most influential organizations in promoting the construction of green

133. *Id.* (focusing on Arsenal's commitment to promote use of public transportation when visiting Emirates Stadiums).

134. *Id.* (explaining efficiency of London Underground system and other public transportation methods in getting people to and from Arsenal games).

135. Mark V, *The Brand New Juventus Stadium*, ARCHITECTISM (Oct. 4, 2011, 8:52 AM), <http://architectism.com/the-brand-new-juventus-stadium/> (describing environmentally conscious construction of new Italian soccer stadium).

136. *Id.* (outlining history of ground-breaking, construction, and opening of Juventus Stadium from 2009 to 2011).

137. *Id.* (highlighting methods used in stadium construction to reduce environmental impact).

138. *Id.* (detailing criticisms of new Juventus Stadium's failure to use renewable energy in daily stadium operations).

139. *Id.* (showing club's response to concerns over environmental impact of stadium).

140. See Mark V, *supra* note 135 (describing one of Juventus' methods of responding to criticism about environmental impact of new stadium).

141. See *UEFA Guide to Quality Stadiums*, *supra* note 120, at 90-101 (describing ways UEFA promotes green construction and energy reduction techniques).

stadiums is the world's governing body for soccer, the Fédération Internationale de Football Association (FIFA).¹⁴² Prior to the 2010 World Cup in South Africa, FIFA placed a great deal of emphasis on creating stadiums featuring "cutting-edge sustainable building strategies."¹⁴³ The Moses Mabhid Stadium in the city of Durban uses natural cooling techniques, is specifically angled to maximize sunlight, and disperses collected rainwater throughout the stadium to minimize environmental impact.¹⁴⁴ The jewel of the South African stadiums, the Soccer City Complex in Johannesburg, which hosted the 2010 World Cup Final, features a transparent roof that allows sunlight to illuminate the stadium and decreases the need for artificial light.¹⁴⁵

FIFA is committed to continuing this trend of green stadium development and has carried it on to the 2014 World Cup in Brazil.¹⁴⁶ As part of the agreement for choosing Brazil as the host nation, all twelve World Cup stadiums were required to receive certification in accordance with LEED criteria.¹⁴⁷ A number of factors went into the selection, design, and construction of each new stadium, including transportation infrastructure, energy and water management, photovoltaic roofing, and waste disposal and operations monitoring.¹⁴⁸ Given the success of this initiative in 2010 and the praise FIFA and Brazil are receiving for continuing it into 2014, a prospective host nation's commitment to building green stadiums will likely become a major part of the selection process for future World Cup sites.¹⁴⁹

142. See Falk Jaegar, *World Champions in Stadium Construction*, GOETHE INSTITUT (July 2012), <http://www.goethe.de/kue/arc/nba/en9654133.htm> (emphasizing role FIFA has played in recent years leading charge for green stadiums).

143. See Andrew Michler, *World Cup 2010: South Africa's Top 5 Stunning Green Stadiums*, INHABITAT (June 9, 2010), <http://inhabitat.com/world-cup-2010-south-africas-top-5-stunning-green-stadiums/> (profiling innovative stadiums created under FIFA guidance for 2010 World Cup in South Africa).

144. *Id.* (outlining environmental features of one of South Africa's new environmentally friendly stadiums built for 2010 World Cup).

145. *Id.* (cataloging green features on Soccer City Complex).

146. See Jaegar, *supra* note 142 (explaining Brazil and FIFA's commitment to continuing construction of environmentally friendly stadiums for 2014 World Cup).

147. *Id.* (detailing importance of green stadium movement in awarding of 2014 FIFA World Cup). For a discussion of LEED and LEED certification, see *supra* notes 75-83 and accompanying text.

148. *Id.* (listing several factors FIFA considered when selecting locations in Brazil to build stadiums that would host 2014 World Cup games).

149. See *id.* (praising FIFA and Brazil for ambition in applying LEED standards to stadiums for 2014 World Cup).

VI. CRITICISMS OF THE GREEN STADIUM MOVEMENT

Criticism of the green stadium movement comes from many angles, ranging from those who argue it goes too far to those who claim it does not go nearly far enough.¹⁵⁰ One complaint is that the sheer size and magnitude of the events held in these stadiums are so harmful to the environment that the steps taken by teams really do not do nearly enough to counteract the environmental damage caused.¹⁵¹ For example, AT&T Stadium consumes as much power as the city of Santa Monica, California per year.¹⁵² There is also a widely held belief among journalists and environmental experts that while some new stadiums are considering the environment, at least as many other new stadiums are built with little regard for their impact on the planet.¹⁵³

Critics also point to the carbon emissions at these stadiums from each game as evidence that the measures taken are insufficient.¹⁵⁴ This has led to claims of “greenwashing:” a belief that teams are simply doing external, cursory green activities to earn a positive public appearance, while doing little to solve bigger, overall problems.¹⁵⁵ For example, depending on the sport, teams produce between 179 (MLB) and 716 (NFL) tons of carbon per game.¹⁵⁶ This means baseball stadiums, which host eighty-one games per season, produce nearly 30,000 tons of carbon emissions over the

150. See Timon Singh, *Frank Gehry Slams LEED, Calls Sustainable Design “Political”*, INHABITAT (May 11, 2010), <http://inhabitat.com/frank-gehyr-calls-sustainable-design-political/> (noting Gehry’s arguments that LEED certifications are political); see also Ian Gordon, *Can Stadium Sports Really Be Green?*, MOTHER JONES (Oct. 24, 2011, 2:30 AM), <http://www.motherjones.com/environment/2011/10/green-sports-stadiums-baseball-giants> (arguing stadiums are not doing enough to be green).

151. See Gordon, *supra* note 150 (detailing scope of U.S. sporting events in relation to efforts teams are making to minimize environmental impact).

152. Amanda Little, *Can Professional Sports Do More Than Politics to Save the Planet?*, FORBES (Nov. 15, 2010, 10:32 PM), <http://www.forbes.com/sites/amanda-little/2010/11/15/can-professional-sports-do-more-than-politics-to-save-the-planet/3/> (demonstrating scope of energy needs of some U.S. sports stadiums, even those that have taken steps to reduce environmental impact).

153. *Id.* (noting environmental damage majority of new stadiums cause). Green stadiums may not be making an impact on the environment because “for every green sporting stadium that’s being built, there are two more that are going in the opposite direction.” *Id.*

154. See Gordon, *supra* note 150 (noting amount of carbon emitted at sporting events).

155. See *id.* (expanding on skepticism of some toward green stadium movement).

156. Gordon Studer, *Foul Ball: Why Environmentalists Should Love the NFL*, MOTHER JONES (Nov./Dec. 2008), <http://www.motherjones.com/environment/2008/11/foul-ball> (calculating amount of carbon emitted per team in each sport in United States over course of season).

course of a season.¹⁵⁷ For comparative purposes, a family of four in the United States produces less than forty-two tons of carbon in a year.¹⁵⁸ Finally, critics highlight that professional teams are for-profit entities and only take steps to reduce their environmental impact if it helps their bottom line.¹⁵⁹

Another popular criticism of the green construction movement is that environmental issues have no place in the architecture and design world.¹⁶⁰ Noted architect Frank Gehry, the man responsible for buildings such as the Guggenheim Museum in Spain and the Disney Concert Hall in Los Angeles, said in a 2010 speech that issues like climate change and sustainable design are “political” issues with which architects should not concern themselves.¹⁶¹ While Gehry has since clarified his comments about global warming, calling it a crisis that everyone must address, there are a number of other scholars in the architecture field who support his original sentiment.¹⁶²

Gehry also criticized LEED and LEED certification.¹⁶³ Gehry called LEED “bogus stuff” and said it often resulted in costs that were “enormous” and “don’t pay back in your lifetime.”¹⁶⁴ Other architects support Gehry’s comments on LEED, and statistics published after his speech confirm LEED certification is overly expensive.¹⁶⁵ Fred Bernstein, architecture critic and writer, defended Gehry’s comments in an open letter to a fellow architect who had

157. *Id.* (noting amount of carbon released during a baseball season).

158. See Gordon, *supra* note 150 (stating amount of carbon average U.S. family produces in a year).

159. *Id.* (casting doubts on whether steps taken by teams are actually effective or motivated by financial concerns).

160. Singh, *supra* note 150 (citing belief among architecture community that these issues are out of place).

161. *Id.* (quoting Gehry’s opinion about green architecture and global warming).

162. Lloyd Alter, *Frank Gehry Starts Architectural Bunfight with Comments on LEED and Green Building*, TREEHUGGER (May 20, 2010), <http://www.treehugger.com/sustainable-product-design/frank-gehry-starts-architectural-bunfight-with-comments-on-leed-and-green-building.html> (citing division among prominent architects regarding Gehry’s comments).

163. See Singh, *supra* note 150 (highlighting Gehry’s comments that LEED system is inefficient).

164. *Id.* (quoting Gehry’s response when asked about LEED certification system).

165. Timon Singh, *Frank Gehry Slams LEED, Calls Sustainable Design “Political”*, INHABITAT (May 11, 2010), <http://inhabitat.com/frank-gehry-calls-sustainable-design-political/2/> (citing studies that show LEED certification can add as much as \$12,000 to cost of average family home).

criticized Gehry.¹⁶⁶ In his letter, Bernstein accused LEED of merely encouraging greenwashing, saying it “gives eco-cred to buildings that, in many cases, shouldn’t have been built.”¹⁶⁷ For support, Bernstein mentioned a complex in Las Vegas that consists of “18 million air-conditioned square feet smack in the middle of the Mojave Desert,” about which he claimed, “I can’t imagine a greater environmental disaster than this complex . . . [a]nd yet it was awarded LEED Gold status.”¹⁶⁸

Criticism of LEED and the LEED certification system has grown since 2010, and in 2012, a *USA Today* article touched on some of the condemnation and concerns about the LEED system.¹⁶⁹ The article found designers often picked the easiest and cheapest options available to achieve enough points to gain LEED certification, including installing bike racks and showers and posting educational descriptions about the buildings themselves.¹⁷⁰ Buildings can also receive LEED points for something as simple as “giving office workers their own light switches, views of the outdoors, or temperature-control mechanisms, which can include operable windows or desk fans.”¹⁷¹ Such techniques demonstrate how buildings can effectively purchase LEED certification with minimal positive environmental impacts.¹⁷²

Buildings that achieve LEED certification are also often awarded significant tax breaks, despite possibly not having a mea-

166. Fred Bernstein, *An Open Letter to Susan Szenasy re: Frank Gehry*, ARCHNEWSNOW (May 17, 2010), <http://www.archnewsnow.com/features/Feature331.htm> (defending Gehry’s comments regarding LEED not being panacea others perceive it to be).

167. *Id.* (quoting opinion about flaws in LEED certification).

168. *Id.* (referencing claims that LEED’s point system focuses on rewarding wrong things, like bicycle racks, as opposed to distance people travel to reach building).

169. Christopher Schnaars & Hannah Morgan, *In U.S. Building Industry, Is It Too Easy to Be Green?*, USA TODAY (June 13, 2013, 11:53 AM), <http://www.usatoday.com/story/news/nation/2012/10/24/green-building-leed-certification/1650517/> (providing overview of concerns and problems with LEED and green building industry).

170. *Id.* (mentioning people seeking LEED certification often choose cheapest options instead of those most likely to decrease environmental impact of new buildings).

171. *Id.* (detailing some simple methods to gain points for LEED certification).

172. *Id.* (outlining concerns of Bob Berkebile, architect who helped create LEED system). Those who seek LEED certification may not be environmentally motivated; “[p]eople have a tendency to buy points – they buy that bike rack even though there’s no value in it . . . It’s unfortunate. That’s just where we are at this time.” *Id.*

surable impact on the environment.¹⁷³ While some LEED certified buildings house advanced technologies like solar panels or wind-mills, designers are not required to do anything more than meet defined minimal standards in energy and water conservation, air quality levels, and recycling procedures.¹⁷⁴ In fact, the most popular way to earn LEED points, earned by 99.7 percent of all LEED certified buildings, is to have a member of the design team pay LEED between \$500 and \$800 to take a class to become a “LEED expert;” the class has little to no direct environmental benefit, but has generated \$3.3 million for the GBC.¹⁷⁵ Comparatively, only fourteen percent of buildings actually create renewable energy and only twelve percent incorporate water-reduction plans, such as waterless urinals or on-site sewage treatment.¹⁷⁶

Buildings are LEED certified before anyone uses them, which, as one expert put it, is “like the ranking of football teams before the season starts.”¹⁷⁷ LEED points, especially for water and energy use, are awarded based on computer model projections rather than actual statistics once the building is in use.¹⁷⁸ In 2007, the GBC admitted the computer models did not accurately forecast reduced energy and water use.¹⁷⁹ In fact, a 2012 study of eleven LEED certified buildings used by the U.S. Navy found that four used more energy than comparable non-LEED buildings, and four more were only nine percent more efficient.¹⁸⁰ Further, the small increase in efficiency does not make a sufficient improvement to warrant the cost of acquiring LEED points when attempting to earn certifica-

173. *Id.* (explaining how Maryland building went from \$530,000 tax break to \$1.6 million by adding preferred parking for hybrids).

174. *See Schnaars & Morgan, supra* note 169 (describing some ways to earn LEED points that have little to no impact on environmental impact of building).

175. *Id.* (highlighting fact that U.S. Building Council receives five percent of fees from every person who pays to become LEED Expert).

176. *Id.* (displaying disparity between easy LEED points and those that seem likely to have definite environmental impact on daily basis).

177. *Id.* (quoting Oberlin College’s John Scofield’s congressional testimony on LEED in May).

178. *See id.* (illuminating flaw in awarding points for reducing water and energy use before any water or energy has actually been used in building).

179. Schnaars & Morgan, *supra* note 169 (quoting 2007 study by organization that runs LEED). Notably, “Buildings have a poor track record for performing as predicted during design [m]ost buildings do not perform as well as design metrics indicate.” *Id.*

180. *Id.* (citing 2012 study by University of Wisconsin researchers highlighting inefficiencies of LEED-certified buildings). It is becoming apparent that “[e]nergy savings are not closely related to the number of points received” *Id.* (quoting the study).

tion.¹⁸¹ In comparison, the EPA's EnergyStar program examines buildings on an annual basis and will only certify a building after a year of proven energy efficiency during occupancy.¹⁸²

Despite criticisms of LEED and studies calling its impact into question, many governments, ranging from federal to local, have embraced and incentivized the green building movement.¹⁸³ Between federal, state, and local governments, approximately 2,000 developments, buildings, and homes have received tax breaks totaling half a billion dollars nationwide.¹⁸⁴ Just as Gehry mentioned in his comments regarding LEED, such construction and relief programs have saddled taxpayers with extra costs to bear.¹⁸⁵ For example, LEED certification has cost taxpayers in Ohio an extra \$131 million in construction costs for publicly funded schools.¹⁸⁶ According to the U.S. General Service Administration, the cost of constructing a single federal building increases by \$150,000 due to "soft costs," such as fees to the GBC and hiring LEED consultants.¹⁸⁷

VII. FUTURE DEVELOPMENTS

One of the most notable stadiums currently under construction is the new San Francisco 49ers Levi's Stadium in Santa Clara, California.¹⁸⁸ As previously mentioned in this Comment, California's CEQA is one of the most stringent environmental laws in the country.¹⁸⁹ CEQA forces prospective builders to file an Environ-

181. *See id.* (discussing low percentage of increase in environmental benefits).

182. *Id.* (mentioning EPA's alternate method of measuring buildings' energy efficiency). *See also Guidelines for Energy Management Overview*, ENVTL. PROT. AGENCY, http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index (last visited Mar. 1, 2013) (explaining scope, goals, and guidelines of EPA's EnergyStar Program).

183. Schnaars & Morgan, *supra* note 169 (listing state and local governments that have adopted or encourage use of LEED system in new construction).

184. *See id.* (demonstrating scope of relief granted to green buildings across country in form of tax breaks and relief).

185. *Id.* (exposing costs LEED places on taxpayers and questioning governments' justifications). While taxpayers are paying more for green buildings, "Governments seeking to justify LEED often rely on reports funded by the council or written by council leaders asserting long-term cost savings." *Id.*

186. *Id.* (showing costs in state of Ohio relating to LEED certification on public school construction and renovation).

187. *Id.* (detailing some increased costs that have come about as result of LEED certification with little to no savings received by people paying).

188. John Cote, *Study Examines Impact of New 49ers Stadium*, S.F. CHRON. (July 31, 2009, 4:00 AM), <http://www.sfgate.com/49ers/article/Study-examines-impact-of-new-49ers-stadium-3291288.php> (explaining new team stadium and various features team planned to include when stadium was first announced).

189. *See* Danney, *supra* note 10, at 132-33 (showcasing impact of CEQA on potential NFL stadiums in California cities).

mental Impact Report (EIR), which requires builders to identify any potential adverse effects on the environment and list possible alternative options to resolve such prospective problems.¹⁹⁰

An EIR consists of several steps: (1) a preliminary study to determine whether an EIR is required; (2) a composed Draft EIR that must conform to strict CEQA guidelines; (3) a public notice and comment period; (4) an evaluation period where public comments must be incorporated into the Draft EIR; and (5) a Final EIR that is submitted to the lead agency in charge of that area or project for final approval or denial.¹⁹¹ That agency must then file a Notice of Determination that certifies the EIR was reviewed, considered, and complies with CEQA guidelines, or approves the project based on “overriding interests,” such as economic, social, or technological factors.¹⁹²

In May of 2009, the San Francisco 49ers announced they would be leaving their current stadium in San Francisco to move to a new stadium that would be constructed in nearby Santa Clara.¹⁹³ Following CEQA’s requirements, the team and the city submitted a Draft EIR in July 2009, and in December of that year the city council of Santa Clara voted to put the stadium project on the June 2010 ballot for a public vote.¹⁹⁴ After the measure passed in June, and various red tape issues were resolved, the team broke ground on the new Santa Clara stadium on April 19, 2012.¹⁹⁵

Some critics in California have argued that projects, such as the Levi’s Stadium and Farmers Field, the proposed NFL stadium in Los Angeles, only passed because CEQA was weakened in 2009 through the passage of California Assembly Bill 81 (Bill 81).¹⁹⁶ Bill 81’s purpose was threefold: (1) exempt the proposed new Los Angeles football stadium from CEQA; (2) require the project to follow certain city programs; and (3) apply the bill retroactively, since the

190. *See id.* at 131-32 (outlining CEQA process of filing EIR for approval).

191. *See id.* at 135-39 (listing steps required in EIR process to gain state approval and begin construction on new structures in California).

192. *Id.* at 138-39 (highlighting state agencies’ role in EIR approval and requirements needed to gain approval).

193. *See id.* at 141 (detailing steps 49ers took in deciding to build Santa Clara stadium).

194. *Levi’s Stadium*, CITY OF SANTA CLARA, <http://santaclaraca.gov/index.aspx?page=1197> (last visited Mar. 1, 2013) (cataloging timeline of steps leading to construction of new 49ers stadium in Santa Clara).

195. Price, *supra* note 16 (detailing ground-breaking celebration for new Santa Clara stadium).

196. *See Danney, supra* note 10, at 144-50 (discussing role Bill 81 played in getting Los Angeles stadium built).

project was likely subject to objections under CEQA that had already been filed against the project.¹⁹⁷

Those who were opposed to the Santa Clara stadium on environmental grounds pointed to the EIR, which cited potential negative environmental impacts in several areas, including flooding, effects on migratory bird patterns, detrimental impact on soil and air quality, and increased noise pollution.¹⁹⁸ Critics also emphasized Bill 81's impact on the Los Angeles project and pointed out it gave the 49ers tremendous leverage to use the same privileges, if needed, to circumvent CEQA requirements.¹⁹⁹ In the end, all CEQA matters concerning the Santa Clara stadium were settled and construction broke ground in 2012.²⁰⁰

Turning to the stadium itself, there are a number of features that the 49ers plan to include to make the Santa Clara stadium "the most environmentally-friendly" stadium in the NFL.²⁰¹ The team's Draft EIR was over 3,000 pages long and considered everything from air pollution caused by grilling in the parking lot to the impact solar panels on top of the stadium would have on migratory birds.²⁰² To minimize the stadium's environmental impact, the stadium will feature photovoltaic panels, a green roof, easy access to public transportation, water-conserving toilets, recycled materials, and top-of-the-line environmental control systems.²⁰³

Another future stadium that plans to raise the "green building" bar to a new level is the proposed new Minnesota Vikings NFL stadium in Minneapolis.²⁰⁴ The Minnesota Department of Natural Resources (MDNR) has called on the Vikings to consider the stadium's impact on local and migratory birds when designing the

197. See *id.* at 144-45 (listing stated purposes of Bill 81 in getting Los Angeles stadium around CEQA requirements).

198. See *id.* at 147 (highlighting concerns in EIR found by environmental groups).

199. *Id.* at 147-48 (emphasizing Bill 81's role in influencing stadium process in California).

200. Price, *supra* note 16 (discussing information about Santa Clara and 49ers organization's efforts to get stadium constructed and opened by 2014).

201. *Id.* (promoting planned environmental features in new stadium at groundbreaking ceremony).

202. Cote, *supra* note 188 (outlining considerations of 49ers when conducting EIR prior to stadium's construction).

203. *The Next Generation of Stadium Design: Features*, S.F. 49ERS, <http://newsantaclarastadium.com/about#/design> (last visited Mar. 2, 2013) (listing various environmentally-friendly features new stadium will have).

204. Richard Meryhew, *Longtime Fan Will Design Vikings New \$975 Million Stadium*, MINNEAPOLIS STAR TRIB. (Oct. 7, 2012, 8:27 AM), <http://www.startribune.com/local/minneapolis/172975921.html?refer=y> (describing proposed Vikings stadium in Minneapolis and features new stadium will have).

new structure.²⁰⁵ Like California, Minnesota has a law that requires review of all new buildings and preparation of an Environmental Impact Statement for any new construction, and there have already been several public comments directed toward the new stadium regarding the health of migratory birds.²⁰⁶ The current planned design of the stadium contains a large amount of glass, including a transparent roof, which the MDNR fears could be harmful to birds' flying patterns.²⁰⁷ Such issues appear to be the next level of concerns that stadium developers will face, especially as advances in technology and construction make things like water-usage and material waste recycling easier to control.²⁰⁸

VIII. CONCLUSION

Sports teams have done a number of things to decrease the environmental impact of their stadiums.²⁰⁹ As long as public money goes into financing the construction of these stadiums, it seems likely teams will be under pressure from government and non-government entities alike to do more to counteract the negative effect their stadiums can have on the environment.²¹⁰ As teams constantly seek new and exciting ways to attract and keep fans, building a new stadium is one method that is virtually certain to increase attendance and raise revenues.²¹¹ As new stadiums are built across the United States, teams have an opportunity to utilize the latest advancements in conservation technologies and innova-

205. Brian Johnson, *DNR Hopes New Vikings Stadium Is for the Birds*, FIN. & COM. (Dec. 11, 2012, 2:42 PM), <http://finance-commerce.com/2012/12/dnr-hopes-new-vikings-stadium-is-for-the-birds/> (citing MDNR's concerns about impact new stadium would have on local birds).

206. *Id.* (highlighting public comments MDNR received regarding migratory birds).

207. *Id.* (discussing Minnesota policy on EIS and public concern over new stadium's impact on migratory birds).

208. Tim Nelson, *Stadium Designers Asked to Consider Environmental Concerns*, MINN. PUB. RADIO (Dec. 11, 2012), <http://minnesota.publicradio.org/display/web/2012/12/11/business/stadium-environmental-impact-stadium> (specifying concerns about new Vikings stadium design and its impact on migratory birds).

209. For a discussion of steps teams have already taken to decrease the environmental impact of their stadiums, see *supra* notes 72-119 and accompanying text.

210. See Williams, O'Quin, & Stein, *supra* note 1, at 154-55 (discussing role government plays in funding stadiums and public reaction to what some consider to be sweetheart deals).

211. See Miller, *supra* note 84, at 181-82 (commenting on sports industry's opportunity for continued growth and expansion in United States).

tions in the construction of their stadiums, be it at the next stadium to open or one that opens in 2035.²¹²

Investing in green technology not only helps the community environmentally, but also assists local economies through the creation of green jobs.²¹³ This is especially beneficial to cities in today's economic climate, where many urban areas are searching for ways to bolster their economies.²¹⁴ Unfortunately, sports organizations yield tremendous power in the United States, and that power often trumps environmental interests.²¹⁵ If the United States is truly serious about environmental issues, laws like California's Bill 81 need to be stopped, and public concern for environmentalism must take precedence over the square footage of a stadium's new scoreboard.²¹⁶

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212. See *id.* (detailing sports industry's role as innovator in green building due to prospect of new buildings every few decades).

213. For a discussion of a successful green jobs creation program, see *supra* notes 60-64 and accompanying text.

214. Porteshawver, *supra* note 7, at 264-65 (detailing importance of green jobs in helping cities rebuild infrastructure and improve economically).

215. For a discussion of California Assembly Bill 81 and its impact on CEQA, see *supra* notes 196-200 and accompanying text.

216. See Danney, *supra* note 10, at 150 (expressing concern that opponents of environmental laws have successfully circumvented laws in form of Bill 81).

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